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Life cycle assessment of hydrogen production from water electrolysis

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Hydrogen produced from renewables, works as an energy carrier and as energy storage medium, also overcome the intermittency of typical renewable energy sources. Three main electrolysis technologies are now dominate hydrogen production, which are alkaline electrolysis, polymer electrolyte membrane (PEM) electrolysis, and solid oxide electrolysis cells (SOEC). The problem is there is no comprehensive environmental performance of these three technologies available with the same system boundary. In this paper, we perform a life cycle assessment for three electrolysis technologies. Two types of material components are chosen to carry on the analysis. Life cycle inventories for all components use in the modules/types for each technology and their associated up- stream and down- stream are modelled.